

REMARKS

Amendments of claims 22-25 are based on [0015] of patent application publication of the present invention. Therefore, no new matter is introduced to claims 22-25.

Claim Objections

Claim 22 is amended as the Examiner requested.

Claim Rejections -35 USC section 103

Claims 1-25 are pending – claims 22-25 being currently amended. Claims 1 – 4, 6 – 10, 12 – 16, 18, 19 and 21 are withdrawn.

Claims 5, 11, 17, 20 and 22-25 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Basol. (U.S. Patent 6,921,551)

Claim 5 is as follows:

“An apparatus for analyzing the fillability with a copper electroplating solution, which comprises using a method for analyzing a copper electroplating solution containing an additive, which comprises determining the time-dependent potential change at a cathode current density of 0.1-20 A/dm² to thereby judge the fillability with the copper electroplating solution.”

That is, claim 5 is an invention of “an apparatus for analyzing the fillability with a copper electroplating solution”.

On the other hand, the invention of Basol is as follows:

The present invention relates to methods and apparatus for plating a conductive material on a workpiece surface in a highly desirable manner. Using a workpiece-surface-influencing device, such as a mask or sweeper, that preferentially contacts the top surface of the workpiece, relative movement between the workpiece and the workpiece-surface-influencing device is established so that an additive in the electrolyte solution disposed on the workpiece and which is adsorbed onto the top surface is removed or otherwise its amount or concentration changed with respect to the additive on the cavity surface of the workpiece. Plating of the conductive material can place prior to, during and after usage of the workpiece-surface-influencing device, particularly after the workpiece surface influencing device no longer contacts any portion of the top surface of the workpiece, to achieve desirable semiconductor structures.

That is, Basol discloses an apparatus for plating. However, Basol does not disclose “an apparatus for analyzing the fillability with a copper electroplating solution”. In addition, in Basol does not disclose “an analyzing method used in an apparatus for analyzing the fillability with a copper electroplating solution of claim 5”.

In addition, Basol discloses additives (an accelerator and a suppressor). However, Basol does not disclose an analysis of a fillability in view of the additives.

In addition, in claim 5, time-dependent potential change is determined according to a fillability change of a copper electroplating solution over time. However, Basol does not disclose that time-dependent potential change is determined.

Therefore, constitutions of claim 5 are apparently and largely different from constitutions of Basol.

Therefore, claim 5 is not obvious for an ordinary skilled person in the art when the invention was made. Therefore, claim 5 can not be rejected under 35 U.S.C. 103(a).

Claims 11, 17 and 20 are not obvious for an ordinary skilled person in the art when the invention was made for the same reasons. Therefore, claims 11, 17, and 20 can not be rejected under 35 U.S.C. 103(a). In addition, claims 11, 17 and 20 include a reference electrode while Basol does not have a reference electrode.

Claims 22-25 respectively dependent on claims 11, 17 and 20 are also not obvious for an ordinary skilled person in the art when the invention was made for the same reasons. Therefore, claims 22-25 can not be rejected under 35 U.S.C. 103(a). In addition, in claims 22-25, the fillability is judged according to the Boltzmann's function, while Basol does not uses the Boltzmann's function.

CONCLUSION


Applicant believes that all of the claims are in condition for allowance. Removal of the rejection is respectfully requested.

The Commissioner is authorized to charge any fee(s) due to Squire Sanders and Dempsey, L.L.P. Deposit Account No. 07-1850.

Should the Examiner have any questions or concerns, the Examiner is invited to call the undersigned attorney of record.

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Respectfully submitted,


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